**EPA/ROD/R08-98/079**
**1998**

# EPA Superfund
# Record of Decision:

**EAGLE MINE**
**EPA ID: COD081961518**
**OU 02**
**MINTURN/REDCLIFF, CO**
**09/03/1998**

EPA 541-R98-079
<IMG SRC 980790>

FINAL

# EAGLE MINE

# OPERABLE UNIT NO.2

# RECORD OF DECISION

July 21, 1998

**EAGLE MINE SITE**
**OPERABLE UNIT 2, TOWN OF GILMAN**

# DECLARATION FOR THE RECORD OF DECISION

Site Name and Location
Eagle Mine Site, OU2, Town of Gilman
Eagle County, Colorado
CERCLIS ID # COD08191518

## Statement of Basis and Purpose

This decision document presents the selected remedial action for Operable Unit 2 of the Eagle Mine Site in Eagle County, Colorado chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The selected remedy is consistent with the National Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the administrative record for this site. This Record of Decision (ROD) serves as the final ROD for Eagle Mine OU2.

The State of Colorado, represented by the Colorado Department of Public Health and the Environment, concurs with the selected remedy.

## Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, present an imminent and substantial endangerment to public health and the environment.

## Description of the Remedy

The Eagle Mine Site is a large abandoned mining and milling facility located along the banks of the Eagle River near Minturn, Colorado. The mine site is divided into two operable units. Operable Unit 1(OU 1) is the mine site except the Town of Gilman. Operable Unit 2 (OU2) is the Town of Gilman. Gilman is an abandoned mine town on the bluff above the Eagle River at Belden. Hazardous substances were removed from Gilman and disposed at a permitted disposal site as part of an emergency response action. Several waste rock piles created during mining and milling activities remain on the perimeter of the town. Eagle Mine OU2 was established to address current and potential human health risks from the soil and waste rock that remain in the Town of Gilman.

The selected remedy for Eagle Mine Site OU2 is institutional controls. This remedy addresses the principal threat at the site by limiting site access and providing a long-term, local presence. To accomplish this remedy, local institutional controls will be modified or developed, such as zoning regulations and/or building permit code restrictions. In addition, a contingency strategy will be developed to maintain the integrity of the established site remedy and to inform EPA and the State of Colorado of any proposed change in land use. If land uses change, additional remediation may be required. EPA and the State of Colorado will review any developer-generated plans to assure that they are protective of human health and the environment.

## Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted within five years after commencement of the remedy to ensure that the remedy continues to provide adequate protection of human health and the environment.

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**EAGLE MINE SITE OPERABLE UNIT 2, TOWN OF GILMAN**
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**EAGLE MINE SITE OPERABLE UNIT 2, TOWN OF GILMAN**
**DECISION SUMMARY FOR THE RECORD OF DECISION**

## 1.0 SITE NAME, L0CATION, AND DESCRIPTION

The Eagle Mine Site (CERCLIS ID # COD08191518) is a large abandoned mining and milling facility located along the banks of the Eagle River approximately five miles south of Minturn, Colorado (100 miles west of Denver). The 235-acre site is bordered on the south and west by the White River National Forest which includes the Holy Cross Wilderness Area (see Figure 1-1). The Eagle Mine site consists of the Eagle Mine workings in Belden, the abandoned town of Gilman, and numerous former and existing mine waste disposal areas. All features are located near the Eagle River from Belden to Minturn. Most of the cleanup at the site is completed.

Eagle Mine Operable Unit 2 (OU2) was established to address current and potential human health risks from the soil and waste rock in the Town of Gilman. Gilman is an abandoned mine town on the bluff above Belden. Hazardous substances were removed from the town and disposed at a permitted disposal site as part of an emergency response action. Several waste rock piles created during mining and milling activities remain on the perimeter of the town. Surface soil sampling occurred in 1993 and a risk assessment for this operable unit was completed in 1997.

## 2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

In December 1983, the State of Colorado filed notice and claim against the former owners of the Eagle Mine site for natural resource damages under CERCLA. In 1985, the EPA added Eagle Mine to the National Priorities List and a Remedial Investigation and Feasibility Study (RI/FS) was completed by the State of Colorado. In 1988, the State of Colorado and Viacom, International, Inc. reached agreement on a cleanup plan.

In 1990, EPA became more involved with the project and completed a Record of Decision (ROD) for Eagle Mine Operable Unit No. 1 (OU1). In 1995, EPA, the State of Colorado and Viacom International, Inc. agreed on the work to be performed under the ROD. Together, the two agreements include many of the remedial activities for each site feature discussed below:

Consolidated Tailings Pile (CTP): The CTP covers about 69 acres and contains tailings that were removed from various locations across the site. The majority of the pile has been capped. Final dewatering of the historic pond and of the CTP was completed during 1997 construction season.

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Rex Flats/Old Tailings Pile (OTP) Areas: As a result of mine operations, approximately one million tons of tailings were deposited in the OTP and approximately 150,000 tons of tailings were deposited at Rex Flats. The OTP covers approximately 40 acres and Rex Flats covers approximately 20 acres. In 1992, these tailing were removed and placed in the CTP. Revegetation efforts were undertaken at both areas. The ROD for Eagle Mine OU1 required creation of Institutional Controls to restrict ground water use below the OTP.

Rock Creek Canyon: Numerous activities have occurred in Rock Creek Canyon to control seepage, surface water drainage, and ground water flow. A siphon system was installed to remove contaminated ground water before it reached the Eagle River. In 1992 and 1995, actions were taken in the Rock Creek channel to isolate clean Rock Creek water from seepage and drainage that originated at or within the mine. The seepage and drainage are collected for treatment.

Maloit Park Wetlands: The risk assessment, performed in 1993, determined that soils in Maloit Park Wetlands were contaminated with elevated levels of arsenic, cadmium and lead. In 1996, contaminated materials from the wetland were removed and placed in the CTP. The formerly contaminated area was covered with clean soil and revegetation efforts were undertaken.

Roaster Pile Area: In 1991, five piles of waste material from the ore roasting plant located in the Belden area were removed and transported to the CTP. Revegetation efforts were undertaken at these areas.

## 3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The public participation requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Sections 113 and 117 were met during remedy selection for Eagle Mine OU2.

The Risk Assessment was completed on February 11, 1997. An informal public meeting was announced in the Eagle Valley Enterprise and Vail Trail on April 17, 1997, and held on April 28, 1997, to give the public an opportunity to discuss the risk assessment for Eagle Mine OU2. The Focused Feasibility Study was completed on June 9, 1997, and the Proposed Plan was issued September 24, 1997. Information regarding the site, including the risk assessment, focused feasibility study, and proposed plan, was available at the EPA Administrative Records Center in Denver and at the Town Hall in Minturn, Colorado. The public meeting summarizing the proposed plan and soliciting public comment was held on October 7, 1997. Notice of the meeting was sent to persons on the mailing list and was published in the Eagle Valley Enterprise and Vail Trail in September 1997. A public comment period was held from September 24, 1997 through October 24, 1997. Response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD. This Record of Decision (ROD) serves as the final ROD for Eagle Mine OU2.

Five-Year Reviews of the remedy at OU2 are required as the site has not been released for unlimited use and unrestricted exposure. Periodic Five-Year Reviews will be conducted at Eagle Mine OU2 to evaluate if the remedy remains protective of human health and the environment.

## 4.0 SCOPE AND ROLE OF OPERABLE UNIT WITHIN SITE STRATEGY

Eagle Mine OU2 was established to evaluate potential human health risks at the Eagle Mine Site from the soils in three areas; south Minturn, Maloit Park Wetlands, and Gilman. Arsenic, cadmium and lead levels at Minturn Middle School and the south end of Minturn were below levels of concern for human health and required no action. Metals levels in parts of the Maloit Park Wetlands were above human health standards and the contaminated soil has been removed and replaced with clean fill. Soils around Gilman contain elevated levels of metals, and for that reason, Gilman is the remaining location addressed under Eagle Mine OU2,

## 5.0 SUMMARY OF SITE CHARACTERISTICS

The Town of Gilman is an abandoned town where as many as 350 Eagle Mine employees and their families once lived. The town was founded in 1879 and completely abandoned in 1985. Gilman covers approximately 50 acres and an estimated ninety buildings remain within the Town boundaries. Many of the abandoned houses in Gilman were built in the 1940s and 1950s and numerous buildings have been vandalized and are in a state of disrepair. Access to the site is restricted and trespassers are subject to arrest by the Eagle County Sheriff. Figure 1-2 is a map of Gilman.

An emergency response action was performed at Gilman in 1984 to remove PCB-containing transformers, PCB-containing starting capacitors and other miscellaneous oil, lubricants and chemicals found in the mine below Level 16.

Currently, there are nine waste rock piles on the perimeter of Gilman that cover approximately 20 acres. Waste rock piles and soil are the primary threat at the site as they have the potential to depress pH levels and to release elevated levels of metals (arsenic, cadmium, chromium, lead and manganese) via ground water and surface water pathways. Surface-water run-on diversion trenches were installed at the upstream side of the waste rock piles in Gilman. Impact downstream from the waste rock piles is under investigation as part of OU1 activities. No other sources of contamination have been identified at Gilman.

## 6.0 SUMMARY OF SITE RISKS

Risks at Gilman were evaluated based on potential exposures to metals in surface soils across the town and in the waste rock piles on the perimeter of the town. Lead, arsenic, cadmium and manganese are elevated above background concentrations and were evaluated in the risk assessment (see Table 1), Human health risks were evaluated using the integrated exposure, uptake and biokinetic model (IEUBK) for lead and a reasonable maximum exposure assessment for arsenic,

cadmium, chromium, and manganese. The reasonable maximum exposure scenario addressed metals ingestion by a trespasser (pregnant woman or woman of child-bearing age) to Gilman because access to this location is limited by a locked gate and site geography.

**Table 1: Summarized Soil and Waste Rock Pile Results for Gilman**

| | Analyte | 95% UCL (mg/kg) | Background Range (mg/kg) |
|---|---|---|---|
| Gilman Soil Samples | Arsenic | 155 | 2.4 - 29 |
| | Cadmium | 28.1 | 0.1 - 6.1 |
| | Chromium (total) | 23 | 3.4 - 18.2 |
| | Lead | 1,900 | 6.7 - 230 |
| | Manganese | 2,720 | 71.2 - 1,110 |
| Gilman Waste Rock Samples | Arsenic | 1,220 | 2.4 - 29 |
| | Cadmium | 54.7 | 0.1 - 6.1 |
| | Chromium (total) | 13.6 | 3.4 - 18.2 |
| | Lead | 29,400 | 6.7 - 230 |
| | Manganese | 12,300 | 71.2 - 1,110 |

Conservative assumptions used in the risk assessment indicate a possible risk to trespassers from lead concentrations do not pose risks to trespassers based on the upper bound concentrations in both soils and waste rock. Further discussion of the risk assessment for Gilman is available in "Gilman Townsite Recreational-Trespasser User Soil Exposure Risk Assessment" dated February 11, 1997.

No ecological risk assessment was performed for the Town of Gilman. The Town is considered an urban area and no habitat is expected within the town limits. The ecological impact of the waste rock piles is being evaluated under OU1 activities.

Currently, the Town of Gilman is abandoned, therefore the use is minimal. Future land uses, such as residential, change the exposure scenario and may increase the potential risk from the soil and waste rock in Gilman due to increased exposure times. The potential for development near the Gilman area exists as the Vail Ski Resort plans expansion.

## 7.0 DESCRIPTION OF ALTERNATIVES

A Focused Feasibility Study was conducted to evaluate remedial action alternatives for Eagle Mine OU2. The remedial alternatives were evaluated in accordance with CERCLA, as amended by SARA, and consistent with the NCP. The selected remedies did not include treatment of the principal threat because the risk assessment indicated a lack of risk for the current land-use scenario and no engineering remedy was considered at this time. Two remedial action alternatives were considered, No Action and Institutional Controls. These alternatives are discussed below.

### No Action Alternative

Under the "No Action" alternative the Town of Gilman would remain behind a locked gate. No other action or controls on land use would be taken and changes to land use would not be addressed. This alternative, though easily implemented, is only protective of the trespasser under the current land use. Under this alternative, no additional actions are taken to reduce the potential for exposure from the site, however, EPA and the State retain the authority to prevent disturbance of the remedy.

### Institutional Controls Alternative

Under this alternative institutional controls provide a long-term, local presence. Local regulations are either modified or developed, such as zoning regulations and/or building permit restrictions. The local institutional controls shall include a mechanism for informing the EPA and State of Colorado of any proposed change in land use. A contingency strategy, including requirements that any future developer identify risks to human health and the environment from any land disturbance and eliminate, mitigate or control such risks during and after development

shall also be implemented. This contingenct strategy ensures protection of human health and the environment under the new proposed land use.

The contingency strategy also recognizes that if land use changes, and Gilman is developed for residential use, additional remediation may be required. EPA and State of Colorado will accordingly review any developer-generated assessment land remediation plans to assure that redevelopment is protective of human health and the environment.

**8.0 COMPARATIVE ANALYSIS OF ALTERNATIVE**

The following discussion summarizes the evaluation and comparison of alternatives. The alternatives identified in the focused feasibility study were evaluated using the nine criteria set forth by NCP. These criteria are:

- Overall protection of human health and environment.
- Compliance with applicable or relevant and appropriate requirements.
- Long-term effectiveness and permanence in protecting human health and the environment.
- Reduction of toxicity, mobility, or volume of the contaminants through treatment.
- Short-term effectiveness in protecting human health and the environment.
- Implementability.
- Cost.
- Community acceptance.
- State acceptance.

The first two criteria are threshold criteria and must be attained by the selected remedial action. The next five criteria are balancing criteria. The final two criteria, State and community acceptance, are considered modifying criteria which the Agency evaluated and incorporated before making the final decision.

Both alternatives score similarly for reduction of toxicity, mobility or volume through treatment and for short-term effectiveness. Regarding Implementability, the "No Action" alternative is the easiest to accomplish since no changes to the current regulations or site features are required. Conversely, the "Institutional Control" alternative requires integration of Federal, State and local (Eagle County) regulations and cooperation between these agencies and current or prospective landowners.

The "Institutional Controls" alternative has a greater long-term effectiveness as it is protective if changes in land use occur. A prospective developer would be required to participate in the contingency strategy based on the planned use scenario, then develop the site in a protective manner based on the results of this risk assessment.

Overall protection of human health and the environment is a threshold criteria; therefore, the selected remedy must address this issue. Comparison of the alternatives reveals that the "No Action" alternative is not sufficiently protective of human health and the environment under future land-use scenarios, but the "Institutional Controls" alternative is protective.

**9.0 SELECTED REMEDY**

The preferred alternative for Eagle Mine OU2 is Institutional Controls. This alternative is more effective than the "No Action" alternative. In addition, it integrates the Federal, State, and local (Eagle County) regulators in the remedy process, thus more fully addressing local concerns. The preferred alternative protects human health by limiting access to the area in the short term and requiring EPA, State, and local approval of development plans to ensure future users are not at risk from unacceptable exposures.

The State of Colorado, as represented by the Colorado Department of Public Health and the Environment, concurs with the selected remedy. The State has been involved with site activities throughout the CERCLA process. Eagle County is supportive of the alternative which best protects human health, welfare, and the environment without disturbing the remedies which have been thus far achieved by EPA. Eagle County is in the preliminary planning process in regards to reviewing and selecting Institutional Controls through land-use regulations that will be most effective.

These regulations will prevent development from interfering with the Superfund project remediation, require State and EPA approval of the risk assessment, and require development to enhance the environmental quality of the property.

## 10.0 STATUTORY DETERMINATIONS

The selected remedy meets the statutory requirements of Section 121 of CERCLA. Remedial actions selected at Superfund sites must be protective of human health and the environment. In addition, Section 121 of CERCLA establishes several statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under state and federal environmental laws unless a statutory waiver is justified. The selected remedy must be cost-effective and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statue also contains a preference for remedies that include treatment as a principal element. The following sections discuss how the selected remedy meets these requirements.

### 10.1 Protection of Human Health and the Environment

Comparison of the alternatives reveals that the No Action alternative is not sufficiently protective of human health and the environment, but the Institutional Controls alternative is protective. The selected remedy, Institutional Controls, is protective of human health and the environment by limiting access to the area and requiring EPA, State, and local approval of land use changes.

### 10.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Action and location specific ARARs were not identified for Eagle Mine Operable Unit No. 2, as there are no activities called for in this ROD that would trigger action or location specific requirements. There are no chemical-specific ARARs for surface soils contamination. No chemical specific-ARARs have been identified for air or water media since there have not been releases or discharges from the soils to those media. There is a known release from waste rock pile mumber 8 to surface water. Water ARARs pertinent to this release have already been identified under OU1.

### 10.3 Cost Effectiveness

The cost evaluation of each alternative includes capital costs, annual operation and maintenance (O&M) costs, and a present worth analysis. No engineering-type controls were proposed for Eagle Mine OU2, thus, a cost evaluation was not performed.

### 10.4 Use of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The creation of institutional controls, such as zoning regulations and/or building permit code restrictions, can allow local authorities and EPA to specify permanent remedies appropriate to the actual changes in land use. Neither of the alternatives proposed alternative treatment technologies.

### 10.5 Preference for Treatment as a Principal Element

None of the considered alternatives used treatment as a principal element of the remedy.

**APPENDIX A**
**RESPONSIVENESS SUMMARY**

I. Comments Received During the Public Meeting on 10/7/97:

1) Mr. Gallagher: Could you describe the boundaries of OU2? Does it go down the hill? Does it include the slope from the residential area of Gilman down to Belden Canyon?

RESPONSE: Yes, the slope between Gilman and Belden is included as part of OU2. OU2 also includes the soils in Maloit Park and the south end of Minturn. However, the Maloit Park and Minturn areas have been addressed and are not covered as part of this ROD. Arsenic, cadmium and lead levels at Minturn Middle School and the south end of Minturn were below levels of concern for human health and required no action. Metals levels in parts of the Maloit Park Wetlands were above human health standards and required action. The contaminated soils have been removed and replaced with clean fill.

2) Mr. Fox: The tool or remedy for control at the site will be institutional controls? Who will determine the site boundaries, the county or EPA?

RESPONSE: The boundaries have been described in a general sense, however, no metes and bounds surveys have been completed. The county is working on overlays for the site and will revise the boundary if they find it is not sufficient. The district set up by the County goes beyond the Superfund site boundaries into some forest service areas.

3) Mr. Weigert: Can Gilman be developed?

RESPONSE: EPA does not set the policy regarding development of Gilman. EPA's position is that development is a local or county land use issue. However, any development that occurs must maintain the integrity of the remedy.

4) Mr: Palmer: Who owns the Town of Gillman?

RESPONSE: Ownership at the site is a confusing situation. Originally, the mine was owned by New Jersey Zinc Company. New Jersey Zinc became Gulf + Western and Gulf + Western became Paramount Communications. Paramount Communications has become Viacom International. Gilman was sold by Paramount to Glen Miller, who sold part of the property to Battle Mountain Corporation. Battle Mountain Corporation's loans are under default and the savings and loans backing the company went bankrupt. The FDIC holds the paper for the loans, though a corporation, perhaps Turkey Creek Corporation, is rumored to be purchasing tax liens for the private property on Battle Mountain.

II. Comments Received After the Public Meeting:

A) Mr. Reif: "I do have concern that some of the language on page 5 and 6 of the document (Proposed Plan) conveys an unjustified impression to the public; namely, that future land use of Gilman includes residential use, perhaps with additional remediation. The statements are not actually incorrect as written. However, the tone of the language creates an unsubstantiated impression that relatively minor actions may be all that is required for eventual redevelopment."

RESPONSE: The Environmental Protection Agency (EPA) has not intended to give the impression that Gilman may be redeveloped with only minor additional remediation. EPA has not investigated the type or extent of remediation that might be required at Gilman before residential development would be an acceptable alternative. EPA emphasizes that the main focus of this ROD is protection of human health in the event of redevelopment.

In conjunction with the State and Viacom, EPA removed a large quantity of hazardous materials from Gilman after it was abandoned. Then EPA collected soil samples in the Gilman area that indicated elevated levels of arsenic, cadmium, chromium, and manganese. Based on these sample results, EPA developed a human health risk assessment for the "as is" scenario, i.e. trespasser exposure to the present day Gilman. The risk assessment was limited to a trespasser scenario because it is unclear when, if, and to what extent Gilman will be redeveloped. The results of the risk analysis indicate basically no risks to a trespasser for the unlikely exposure of 90

consecutive days.

EPA is working with the Eagle County Commissioners to ensure that if Gilman is redeveloped, and the resulting human exposure would be more than casual trespass, that the redevelopment would be done in a manner protective of human health. Eagle County has developed draft land-use regulations that will require development of a complete human health risk assessment prior to approval of proposed redevelopment at Gilman. The assessment would follow standard EPA guidelines and would be reviewed by EPA and the State. Any development would be required to eliminate any unacceptable risks that were found through this risk assessment process. These Eagle County regulations will be in place before any redevelopment occurs in Gilman. Whether Gilman can be easily redeveloped or not will be determined by the process described in these Eagle County regulations.

B) Mr. Gallagher: "The Town (of Minturn) agrees with the proposed plan to adopt 'institutional controls' to protect human health and the environment. Any development on or around any part of the Eagle Mine Superfund Site is of great concern to the Town. Therefore, the Town is recommending and requesting that the Record of Decision which assigns 'institutional controls' include the Town of Minturn in the public review process for any development proposals."

RESPONSE: EPA, as well as the State, understands the Town of Minturn's concern with the decisions made on the Eagle Mine Superfund Site. EPA also is aware of Minturn's concern over any decisions that are made that may impact land uses on the site, especially those areas in closest proximity to Minturn.

As the Town knows, EPA and the State have been working with Eagle County to develop County land-use regulations that will protect Superfund cleanup features (capped piles, diversions, etc.) and that will regulate development of any of these areas in a manner that is protective of public health. These regulations apply to unincorporated areas of Eagle County that are part of the Superfund site and are nearing completion.

While EPA and the State can support Minturn's interest in being part of a review process for any land-use decisions on the Superfund site, EPA does not have the authority to require the County to conduct any local review process beyond that which is part of current County regulations. EPA and the State will continue to provide Minturn with review copies of any EPA-generated documents, such as any human health risk assessments.

EPA suggests that Minturn speak directly with Eagle County about the possibility of developing an inter-governmental agreement that provides a role for Minturn in adjacent land-use decisions. EPA understands that this type of agreement has been developed between the County and other municipalities in Eagle County and provides for the town to become a "referral agent."

If Minturn were to annex any of the Superfund site under their annexation authorities, then EPA and the State would have a direct relationship with the Town over these areas. Minturn would, in fact, have a level of responsibility for remedial features that fell within the town boundaries.